



**Federal Aviation  
Administration**

# **Airport Surface Wireless Communications (ASWC) Network**

**Presented to:** Demonstration and Prototyping  
Information Exchange Briefing

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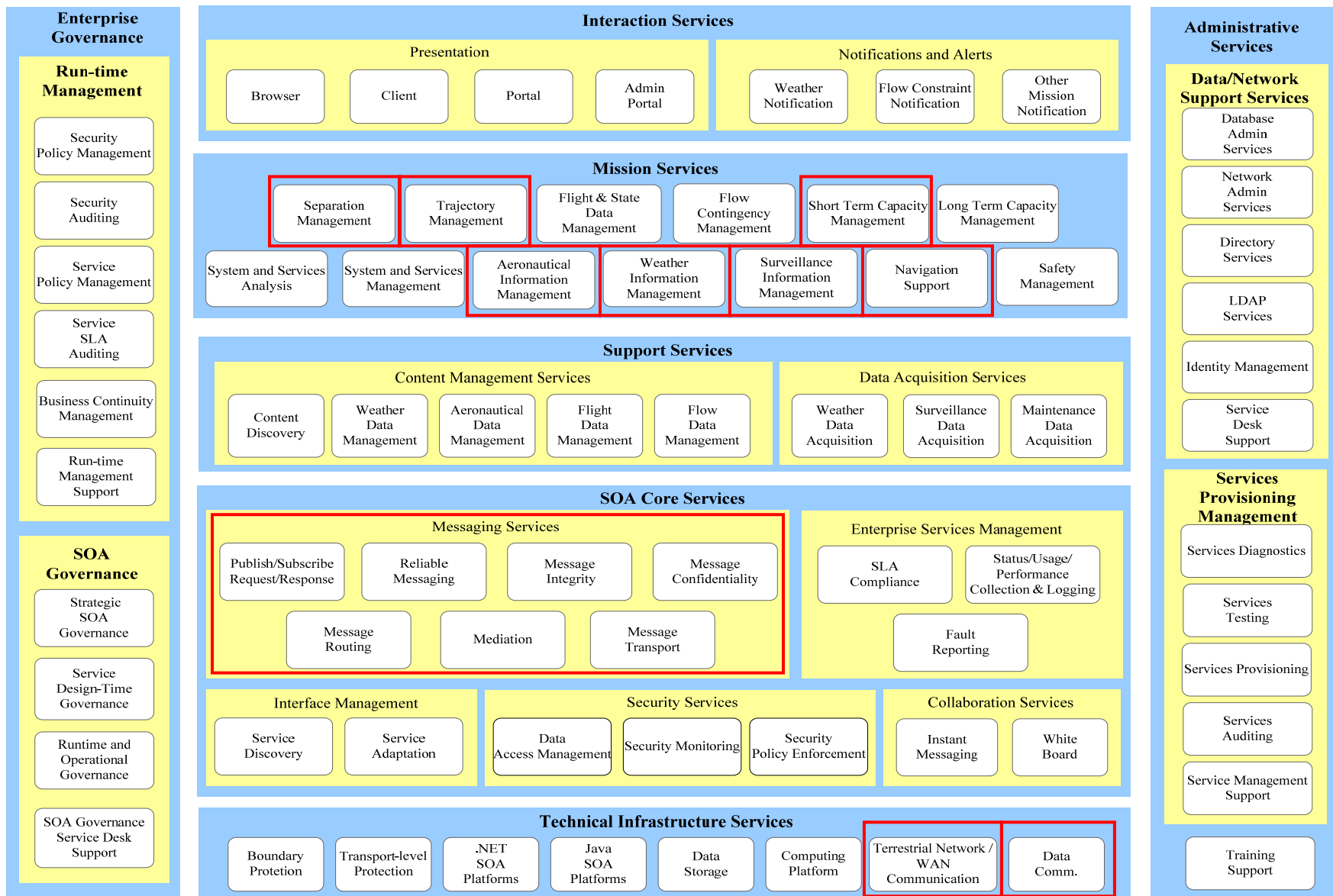
**Date:** June 3, 2009

# Description

- **Research, develop, demo, and standardize the airport surface wireless comm network**
  - Implement ICAO-endorsed FCS actions for C-band airport [and L-band enroute] digital aero comm sys
  - Leverage NextGen CNS Test Bed in Cleveland
  - Establish aviation profile for IEEE-802.16e standard
  - Validate performance and channelization in WRC07 AM(R)S spectrum allocation; Prepare for WRC11 AI
  - Collaborate with Eurocontrol on prototypes & demos
  - Contribute to new RTCA SC for ASWC standards



# NextGen NAS SV-4 Framework



# Key Players

- **FAA ATO-P, ATO-W**
  - ICAO ACP; FCS & ASWC sponsor; RTCA SC lead
- **NASA Glenn Research Center**
  - Next Gen CNS Test Bed; ASWC research
- **Cleveland Airport System**
  - CLE and BKL access
- **Sensis Corporation**
  - Next Gen CNS Test Bed consortium lead
- **ITT Corporation**
  - ASWC research; RTCA SC co-chair (service provider)
- **Honeywell Corporation**
  - ASWC research; RTCA SC co-chair (avionics provider)
- **EUROCONTROL**
  - DLR for ASWC research; EUROCAE for standard



# Major Milestones/Goals

- **Q4FY09: Develop ConUse for C-band ASWC including preliminary requirements and supporting architecture documentation**
- **Q4FY09: Complete development of test bed infrastructure to enable initiation and validation of an aviation specific IEEE 802.16e wireless communication standard**
- **Q1FY10: Provide initial recommendations to RTCA SC for ASWC profile standard**



# Test Bed Sensors and Stations

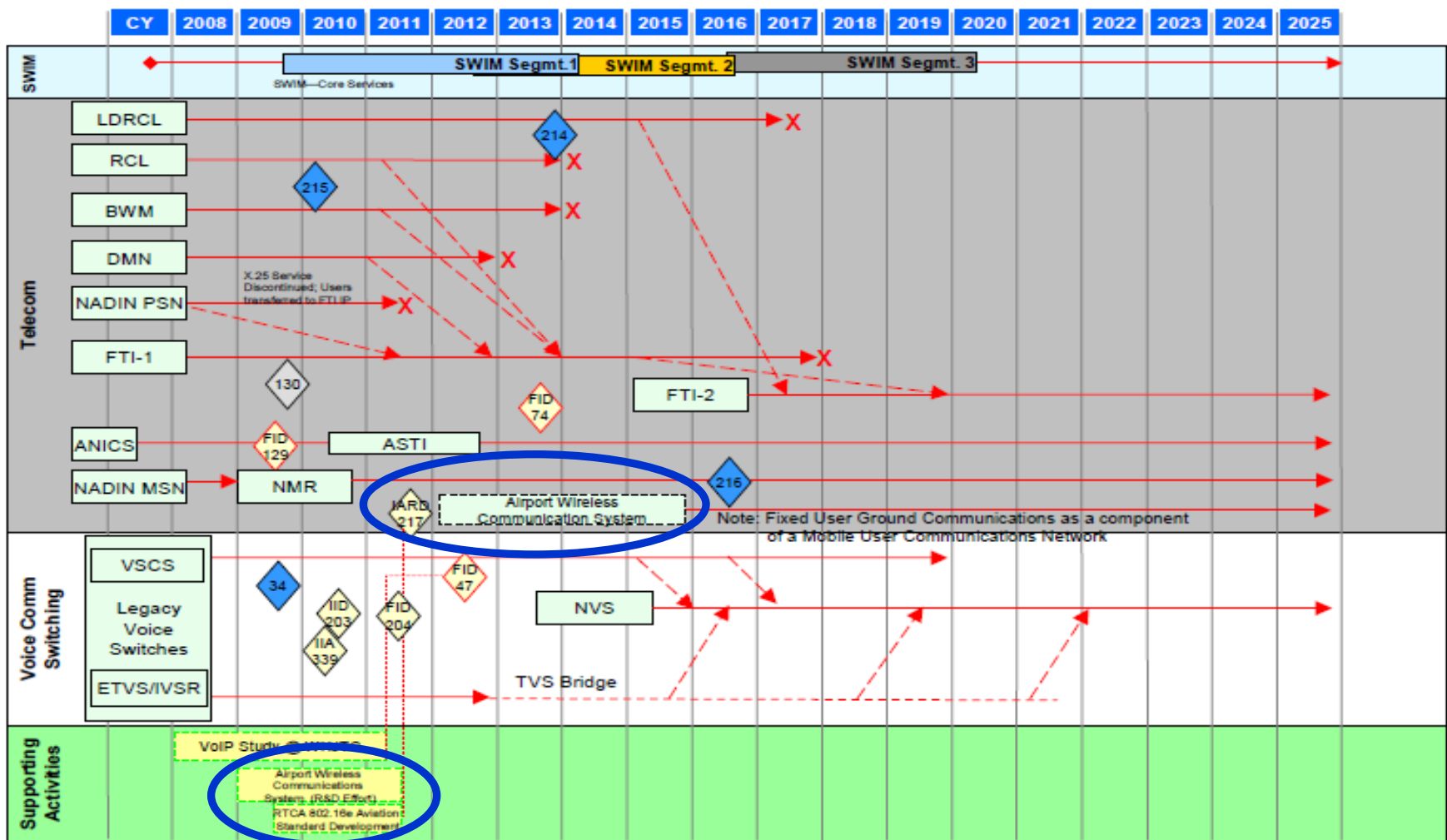


# Accomplishments To Date

- **Q1FY07: NextGen CNS Test Bed established**
- **Q1FY08: WRC-07 new AM(R)S allocation**
- **Q1FY08: NASA GRC spectrum licenses**
- **Q2FY08: ASWC on FAA Data Comm Roadmap**
- **Q3FY08: FCS final technology assessment**
- **Q3FY08: ICAO ACP WG-W endorsement**
- **Q4FY08: GRC-ITT Space Act Agreement**
- **Q2FY09: NextGen 2009 I-Plan solution set**
- **Q3FY09: FAA Project Level Agreement**
- **Q3FY09: Briefing to RTCA PMC for new SC**



# Communications Roadmap (1 of 2)



46

Infrastructure Roadmap, Version 3.0—December 17, 2008



# Future Plans

- **Coordinate with ASWC service and content providers to enrich demos and evaluation**
  - Validate initial mobile applications field test
  - Validate capability to replace fixed point-to-point system with ASWC network
- **Coordinate with Eurocontrol on remaining FCI development, test, evaluation, demo**
  - L-band digital aero comms systems for terrestrial
  - SatCom-bands for oceanic and remote



## **Appendix**

# **MOBILE AND FIXED SERVICES**



# Potential Mobile Applications

- **ATC Comm with any aircraft (A/C-to-fixed, A/C-to-A/C) anywhere**
  - ATC comm with any vehicle in the airport movement area (runway and taxiways, but not ramp area where airlines control)
  - Tower datalink system (TDLS) for flight clearances
  - Loading FMS via CMU with 4D trajectories and modifications
  - Aeronautical information services updates and graphical weather
- **AOC and non-ATS voice and data between airlines and pilot**
  - Surface management, gate control, de-icing state
  - GPS and AIS updates (e.g., moving maps for taxi routes)
- **Mobile SWIM**
  - A/C access/send information (e.g., tactical Wx); Other vehicles RO
  - Fire, safety, snow removal, de-icing (in movement area)
  - Airport operations security; security video from cockpit and cabin
  - Hazards advisories and NOTAMS



# Potential Fixed Applications

- **Sensor data collection/dissemination for situational awareness**
  - MLAT/ASDE-X
  - ADS-B
  - Airport Surface Radar (ASR) data
  - Network enabled Weather Data (ASOS, LLWAS, TDWR, ITWS, icing conditions)
- **Cable/Telco replacement/augmentation**
  - Backup/primary alternative to wired connections
  - Extend cable loop infrastructure to remote surface assets
  - Temporary connection of fixed assets during surface construction or service restoration





